Safety Management System Update

FedEx Corporation

- 5.5M shipments daily
- 663 aircraft
- Over 71,000 vehicles
- Over 280,000 employees
- Information Technology

FedEx Corporation

280,000 employees and contractors worldwide

FedEx Express

Headquarters:
Memphis, TN

FedEx Ground

Headquarters:
Pittsburgh, PA

FedEx Freight

Headquarters:
Memphis, TN

FedEx Services
Solutions and Technology

FedEx Kinko's
Office and Print Center

Headquarters:
Memphis, TN

FedEx®
Express

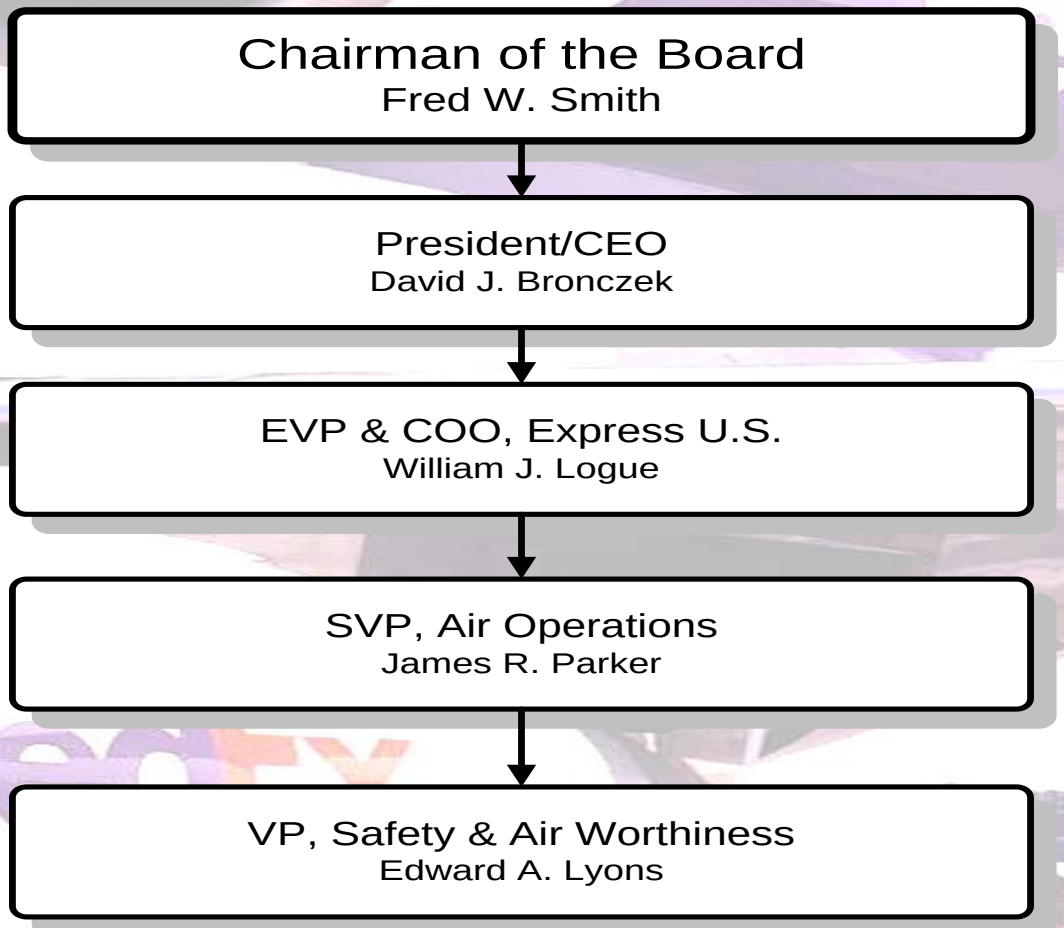
FedEx Express

- 3.2M daily shipments
- 663 aircraft
- Over 41,000 vehicles
- 137,000 employees

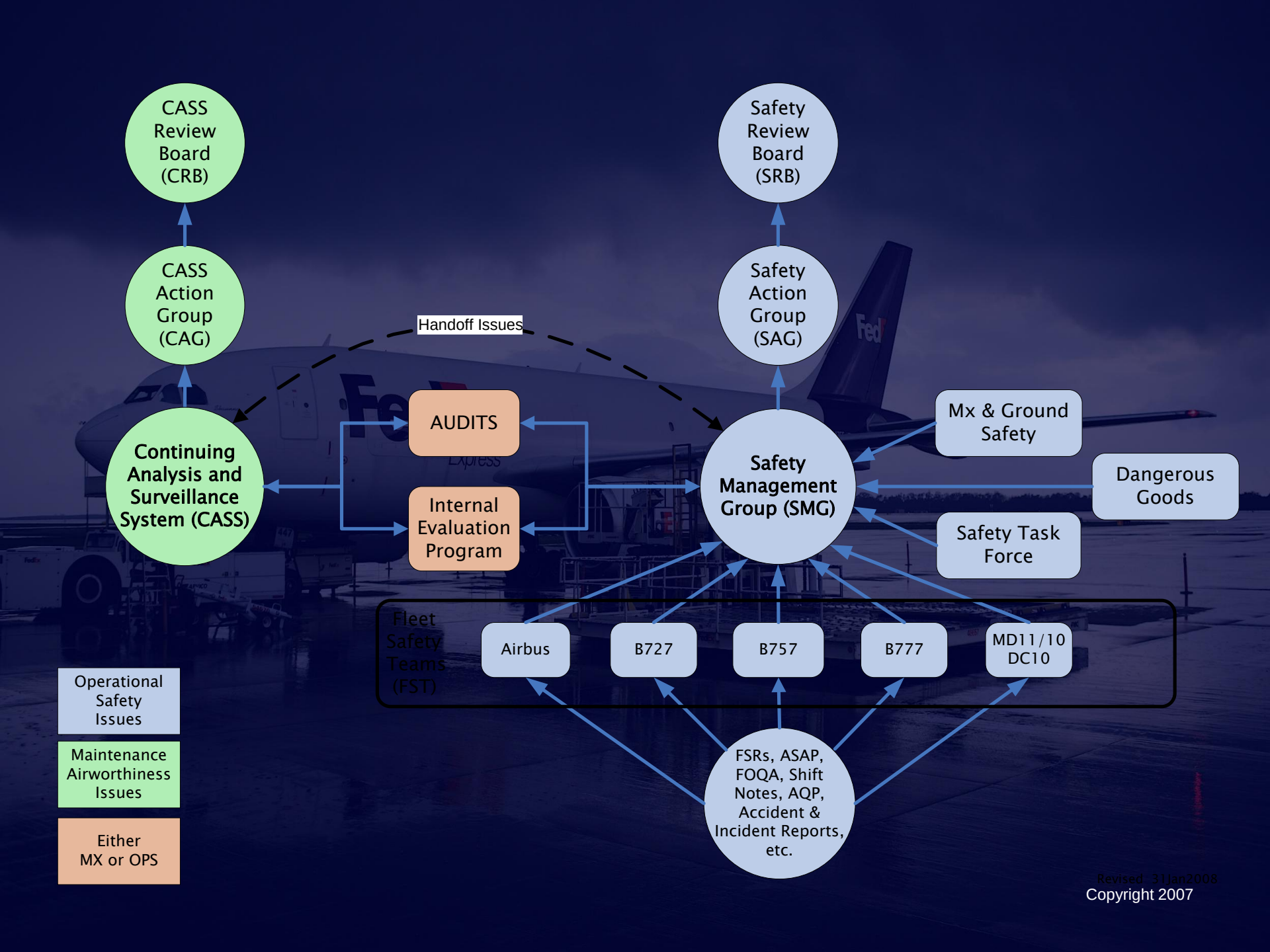
FedEx Air Operations Human Resources

Airline employees:	9,300+
Pilots:	4,700+
Maintenance technicians:	2,500+

FedEx Express Organizational Chart



The safety management process at a glance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Handoff Issues
AUDITS
Internal Evaluation Program
Safety Review Board (SRB)
Safety Action Group (SAG)
Safety Management Group (SMG)
Mx & Ground Safety
Dangerous Goods
Safety Task Force
Fleet Safety Teams (FST)
Airbus
B727
B757
B777
MD11/10 DC10
FSRs, ASAP, FOQA, Shift Notes, AQP, Accident & Incident Reports, etc.
Operational Safety Issues
Maintenance Airworthiness Issues
Either MX or OPS
Revised 31Jan2008
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The organizational accident

AOD has implemented and integrated the following Risk Management Matrix into the risk assessment processes of SMS and CASS:

HIGH				A	Catastrophic	Severity	Accident Death Damage > $5 Mil Fine > 250K Hull Loss Loss of Operating Certificate System Missing
				B	Critical		Reportable Incident Perm. Disability Damage > $500K Fine > $50K Aircraft OOS > 10 Days Loss of Operation Specification System Not Effective
	MEDIUM			C	Marginal		Event-Major Lost Time Injury Damage > $50K Fine > $10K Aircraft OOS > 5 Days System Marginally Effective
		LOW		D	Minor		Event-Minor First Aid Damage < 50K Fine <10K Aircraft OOS < 5 Days Letter of Correction Single Point of Failure
		ACCEPTABLE		E	Negligible		Event-Negligible No Treatment Necessary No Damage or Fine BTB or ATB Letter of Warning No Effect on System
1	2	3	4				
Likelihood							
Continuous	Frequent	Occasional	Remote				
Continuously experienced*	Likely in next quarter	Likely in next year	Not likely in next year				

* For a threat to be continuously experienced, **BOTH** the hazard and the triggering mechanism must be continously present.

Safety Management System Manual (SMSM)

AIR SAFETY

FedEx Express

Revised 01 Jun 2008

UNCONTROLLED COPY WHEN DOWNLOADED

Safety Management Systems (SMS) Update

Dave Prewitt, MD, Air Safety & Regulatory Compliance

Recently, the International Civil Aviation Organization (ICAO) passed a resolution mandating Safety Management Systems for signatory nations.

The deadline for implementation is 2009 – just around the corner. What does this mean for airlines? The current ICAO target is for airlines to have SMS in place by 2009. Some of you may have heard of SMS in recent years. ALPA National has been a strong proponent of SMS and has conducted educational briefings and workshops for the last few years of SMS.

The problem in the US is that there is no definitive guidance available for a carrier, manufacturer or, for that matter, a government agency to follow when establishing an SMS. Transport Canada has mandated SMS, and established clear guidelines for implementation in Canada.

What is SMS? It is really a business-like approach to managing safety. Companies have financial management systems, human resource management systems, logistics management systems—why not an organized method for managing safety? The principles of SMS require that safety be on equal footing with all of the other essential parts of the business. Of course, by effectively managing safety, we hope to manage operational risk to an acceptable level. Risk assessment and mitigation are cornerstones of an SMS model. The big payoff comes when organizations realize that effective SMS reduces cost and improves efficiency, safety. ▶

Another important element of SMS is the cultural element. An effective SMS is dependent upon an active reporting culture. Without awareness, action is not possible. Therefore, a just culture that encourages information flow is critical to the development of SMS. In addition to the traditional flight safety reporting systems, SMS includes ground reporting systems, maintenance reporting systems, data from Aviation Safety Action Programs (ASAP) and Flight Operations Quality Assurance (FOQA) as well as internal audit, quality assurance audit information and the results of external audits performed. The combined impact of this safety information provides a view of organizational health with regard to risk, operational safety and, believe it or not, efficiency. As the reporting culture grows, so does the depth and quality of information that is available to feed the SMS.

So where is FedEx along the path to SMS? We are currently developing our implementation plan and working with other internal groups to ensure smooth integration of SMS. We estimate that it will take approximately three years to develop and put into action a fully functional SMS. The FAA has recently provided DRAFT guidance for both SMS Standards and SMS Implementation. This guidance is extremely comprehensive and should provide an excellent framework for us to build upon. While FedEx Express has many of the programs in place that are called for under SMS, some reorganization and re-writing of programs will be needed. We are currently working on a schedule and implementation plan so that we can begin our journey toward SMS this coming fiscal year.

SMS is a great addition to the management of airline operations and safety. Over time, I believe it will totally change the way we manage safety and risk. We are working hard to develop a system that works for FedEx. We will keep you posted in future articles as our SMS develops.

Safety Management System
Status Report

Dave Prewitt, MD Air Safety & Regulatory Compliance

Two years ago ICAO passed a resolution requiring all signatory nations to implement a Safety Management System (SMS) by 2009.

Many years ago ICAO stated in article 44 of the Convention of International Aviation (Doc 7300), commonly known as the Chicago Convention, that ICAO is charged with ensuring safe and orderly growth of international civil aviation. ICAO approaches this responsibility in two ways. It requires states to institute what are termed Safety Programs at the national level while requiring Safety Management Systems at the organizational level for airlines, manufacturers, maintenance providers as well as agencies within the government that provide services (i.e., Air Traffic Organization like the ATO in the U.S.). The SMS effort represents a major change in the way safety will be managed in the future and places a heavy burden on operators of all types to meet the aggressive timelines established by ICAO.

What is SMS? It is really a collection of policies, procedures, accountabilities and organizational structures that are designed to effectively assess and manage operational risk to an acceptable level within an organization. It is a business like approach to safety which includes safety in all areas of strategic and operational planning from the outset. It is an information management system that focuses on predictive, proactive action versus the traditional reactive approach to safety. Most airlines already have many of the safety programs in place so it becomes a matter of realigning programs into an SMS structure. Companies have financial management systems, human resources management systems, logistics management systems – why not a safety management system?

When establishing an SMS, the cultural and accountability pieces are more complex and take time to achieve. After my experience at Alaska Airlines, I believe that from start to finish it may take three to five years to develop and implement an effective SMS at FedEx Express. There are several areas of concern as we move forward. First, there is no clearly defined standard for SMS within the U.S. The FAA does have a DRAFT SMS Implementation Plan and set of standards; however, they are not in final form. The second consideration with regard to SMS is the cultural or policy issues that are required. These areas involve the idea of a positive safety culture, which is also sometimes referred to as Just Culture. A big part of the cultural changes needed for SMS revolve around how disciplinary matters are managed with regard to incidents and accidents and, more importantly, how errors are managed within the organization. While these seem relatively simple, they represent complex issues and cross all organizational boundaries. These policies are often part of HR regulations, company policy manuals or, in some cases, collective bargaining agreements. Because of these complexities, they can take a year or more to coordinate and staff within a large company.

So where are we at FedEx along the trail to SMS? We have recently agreed to participate in an FAA pilot program to begin developing an SMS. There are a number of airlines participating so that the FAA can test its concepts for SMS implementation using operating carriers. Their plan is broken into four phases which lead a company to SMS certification. FedEx Safety hopes to complete Phase One during FY08. The four phases outlined by the FAA are:

Phase One: Planning and Organization

Phase Two: Reactive Processes

Phase Three: Proactive and Predictive Processes

Phase Four: Operational Safety Assurance & Continual Improvement. ►

By completing Phase One, we believe that we can meet most of the structural, policy and organizational requirements for SMS. We will continue to work toward both ASAP and FOQA as we work on Phase One of SMS. In reality, we already have most of the standard reactive safety processes in place that are required in Phase Two.

Phase Three will take time to achieve. It will require better data streams, better analysis techniques and new approaches for managing data. Our current Flight Safety Reporting system, while effective, does not provide the level of data needed to provide predictive data and analysis. Database redesign and modernization is already underway to meet this requirement.

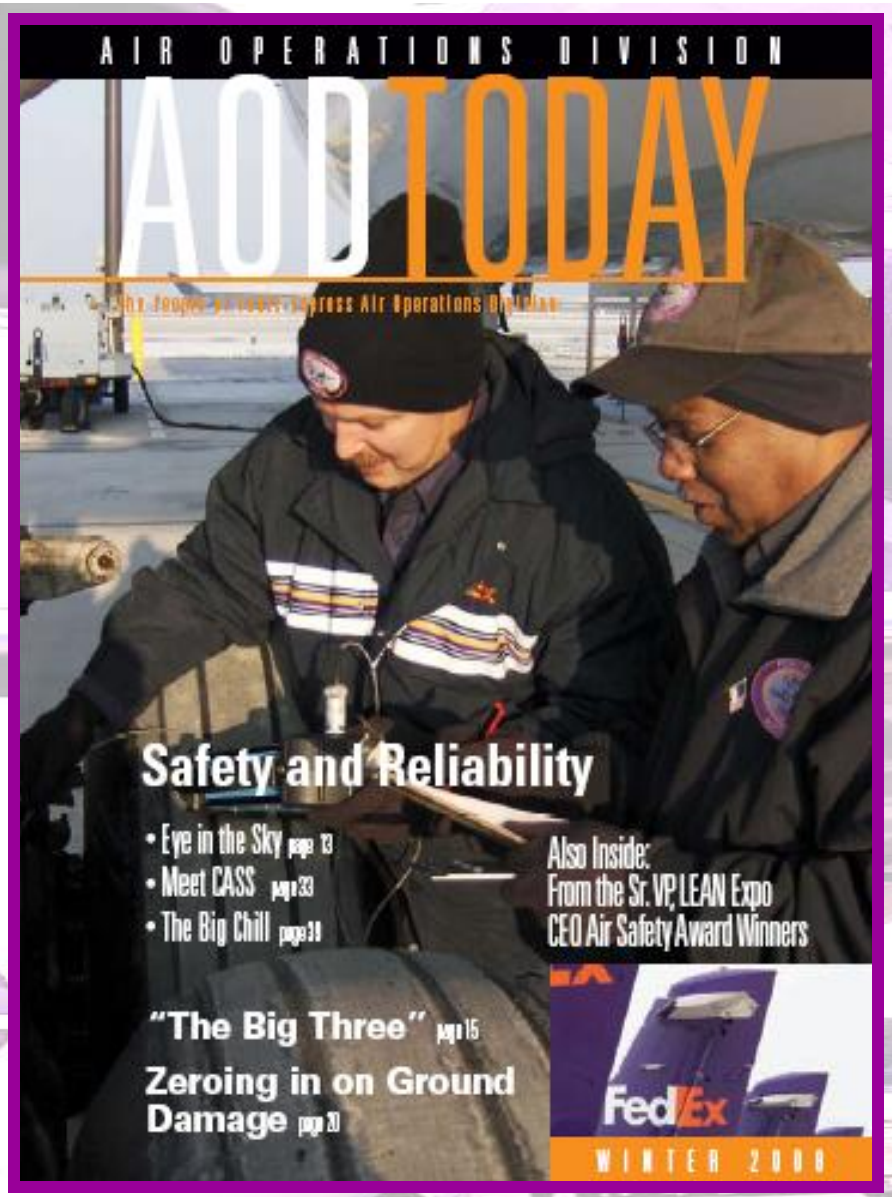
Phase Four represents a fully-functioning SMS. In Phase Four, multiple data streams will provide safety information that will filter through the SMS to senior leadership and be managed based upon risk. At the end of Phase Four, the system will have met all FAA standards and become a tool for continuous improvement as a part of the corporate business operating system.

Our first step in achieving SMS is the completion of a comprehensive gap analysis in order to determine where we are against the standard. The FAA has provided a tool that permits organizations to self-assess and measure current state with regard to SMS and to further facilitate the development of an action plan to meet SMS requirements. We are about 80% complete with our gap analysis and are beginning action plan development at this time.

SMS will add tremendous value to the FedEx safety program in the years ahead. As the airline grows and continues to operate across the globe, effective risk management and predictive safety analysis are keys to ensuring the highest possible levels of safety. This will be a long road and may take several years to complete. That being said, every step we take toward improvement raises the overall level of safety and reduces operational risk. Who knows when we will call it done? Maybe never, because we are talking about continuous improvement and, in my world, that process never really ends.

These communication channels are the primary means of communicating Air Safety messages:

Basic Indoctrination…one hour course for new hires;
Captain's Course…one hour course for transition or upgrade training of new Captains;
Periodic Pilot Meetings (including system wide road shows);
Instructor/Check Airmen Briefings;
Safe Skies Quarterly Magazine;
AOD Today Quarterly Magazine
Flight Crew Information Files (FCIF);
pilot.fedex.com; and
Flight Time DVD


AIR OPERATIONS DIVISION
AOD TODAY
Safety and Reliability
• Eye in the Sky page 13
• Meet CASS page 33
• The Big Chill page 31
Also Inside:
From the Sr. VP, LEAN Expo
CEO Air Safety Award Winners
"The Big Three" page 15
Zeroing in on Ground Damage page 21
FedEx
WINTER 2008

AOD Heads Toward Safety Management System

Jim Wilson

Manager, Flight Safety; Performance, Compliance and Prevention

SVP Jim Parker has taken a step towards developing a world-class safety culture at FedEx Express by announcing an important safety objective:
"To define Safety Management System (SMS) processes within AOD and to develop an SMS implementation plan."

Sounds great! So... what is a Safety Management System?

SMS is a businesslike approach to safety — a specific, systematic and all-inclusive process for managing safety risks. As with all systems management, SMS provides for goal setting, planning and measuring performance. SMS is woven into the fabric of an organization, supporting the operation in such a way that safety becomes seamless. The safety department's role shifts from policy persuasion to process management, auditing and advising. Thus, safety becomes part of the culture — the way people do their jobs. As a bonus, there is an operational performance benefit such that as safety improves, so does the reliability and the quality of the service provided.

In recent years, a lot has been learned about how accidents happen in aviation and other industries. It is now generally accepted that most accidents involve human error. This is not to say that human errors indicate carelessness or incompetence on the job. More often than not, the human is only the last link in a chain that leads to an accident. Rather than treating human error as a violation, SMS now looks deeper into the processes to root out the underlying causes for accidents and incidents. Accidents are prevented by eliminating the recurrent hazards which set up the human to fail.

With this understanding has come new system safety approaches in aviation and medical operations. Hospitals, airlines and the Federal Aviation Administration (FAA) are following in the footsteps of the nuclear and chemical production industries and shifting to process-driven safety prevention. They are creating environments where safety reporting is encouraged and rewarded, and safety data from these reports are identifying root causes to repetitive accidents and incidents. These companies no longer see information regarding hazards as liabilities so long as measures are taken to reduce risk.

How does it work?

With SMS, safety data is presented to management, who in turn rely upon this critical information to make decisions and to lead the organization. Safety reporting isn't really new. Older reactionary safety cultures have reporting systems as well. However, in SMS, managers and staff can access and use safety information relating to the organization's own performance. Information is free-flowing and used only to improve the operational system, not to find fault. For this to work, management must establish systems to collect and analyze safety and performance data more efficiently. Through a systematic process, safety information is processed by a system similar to that in the following diagram. ▶

The system is continuous and constantly reevaluating itself for improvements. Operations are continuously monitored and sampled for both safety (hazard reporting) and performance (reliability and quality). This data comes in all forms (i.e., safety reports, investigations, audits, directly measured performance data, etc.). FedEx currently has several systems in place to accomplish this. These include (but are not limited to):

- Flight Safety Reports.
- Advanced Qualifications Program (Flight Training).
- Quality Assurance Audits.
- Reliability Reports.
- Internal Evaluation Programs.
- Investigative Reports (incident findings).
- Operations Planning and Analysis.
- Operational Recaps.

Continued on page 27 ▶

Publications

SMS Update
Fleet Safety Teams

Dave Prewitt, Managing Director, Air Safety & Regulatory Compliance

As I've discussed in previous editions, we are working hard toward the development of a safety management system here at FedEx.

We are part of an FAA-sponsored pilot program to develop SMS while serving as a learning center for the FAA. In this issue, I want to take the opportunity to update our crews on how our system will function and to discuss our basic SMS framework.

The starting point of our system will be Fleet Safety Teams. These safety teams are being developed to support each operating fleet and will allow us to focus on fleet-specific safety issues. Each team has a team leader and representatives from Standards, Training and Engineering. Additional members will be added, based upon the needs of each team, in order to best manage issues identified in each group. Fleet Safety Teams meet monthly to review fleet-specific safety information; they met for the first time in January. Each team has the ability to develop formal safety recommendations that will be elevated through the SMS for resolution and management.

The key component to improving safety in a proactive way is awareness. We cannot solve issues or problems in our system unless we're aware of them and have a method to analyze and determine ►

Safety Metrics

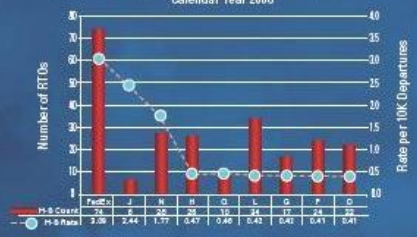
Julie A. Harkey, Sr. Air Safety Specialist

Flight Safety Reports (FSRs) are the primary source of data described in this report. Except where required by the Flight Operations Manual, Flight Safety Reports are a voluntary method for Flight, Maintenance and Ramp personnel to report observed hazardous conditions. Thus, these metrics (statistics) are a sampling of hazards and events at FedEx Express and are not to be considered a conclusive list. This report is the first-level tool to assist line managers to identify hazards, assess risk and determine appropriate control measures.

All FSRs are reviewed and included in our statistics. When FSRs are submitted for every required event, for perceived hazards and other issues, Air Safety is much more likely to be able to spot emerging trends. Quarterly reports go out to management personnel in Flight Operations, Flight Standards, Maintenance Reliability, Air Safety and others. Your FSRs can and do make a difference in the safety of FedEx Express operations.

3,199 Flight Safety Reports were received in Fiscal Year 2007. The overall number of FSRs decreased by 8%, and the rate per 10,000 departures decreased by 9% in FY07-Q4. Technical Reports decreased by 10% and Operational Reports decreased by 20%. Environmental Reports increased, rising by 26%. Ramp Operations continue to be the most frequent theme in FSRs. Weather FSRs bumped Pilot Issues out of second place – Lightning/Static and Windshear events accounted for the large increase in weather FSRs this quarter.

Chart 1: Normalized High-Speed RTOs at 9 ATA Member Carriers
Calendar Year 2006



Rejected Takeoffs (RTOs) continue to be of concern. High-speed RTOs are of particular interest to Air Safety – in 2006, FedEx had more high-speed RTOs than all other airlines participating in the Air Transport Association Top 5 Data Reporting Program (see Chart 1). Of the air carriers depicted in Chart 1, some fly more departures per year than we do at FedEx, and some fly fewer departures. Forty-two percent of all of our RTOs in 2006 were initiated at or above 80 knots.

Chart 2: Flight Crew Procedure Errors

Chart 2 plots the flight crew Procedure Error FSRs voluntarily reported over a five-year time span. During that time, the rate of Procedure Errors per 10,000 departures has more than tripled, and the trend continues to increase. **In an effort to reverse this trend, Air Safety is asking all crewmembers to report via FSR all procedures believed to be confusing, incorrect or ambiguous.** Air Safety will then anonymously bring these to the attention of Flight Standards for review or clarification. See Crew Procedure Errors article on page 30.

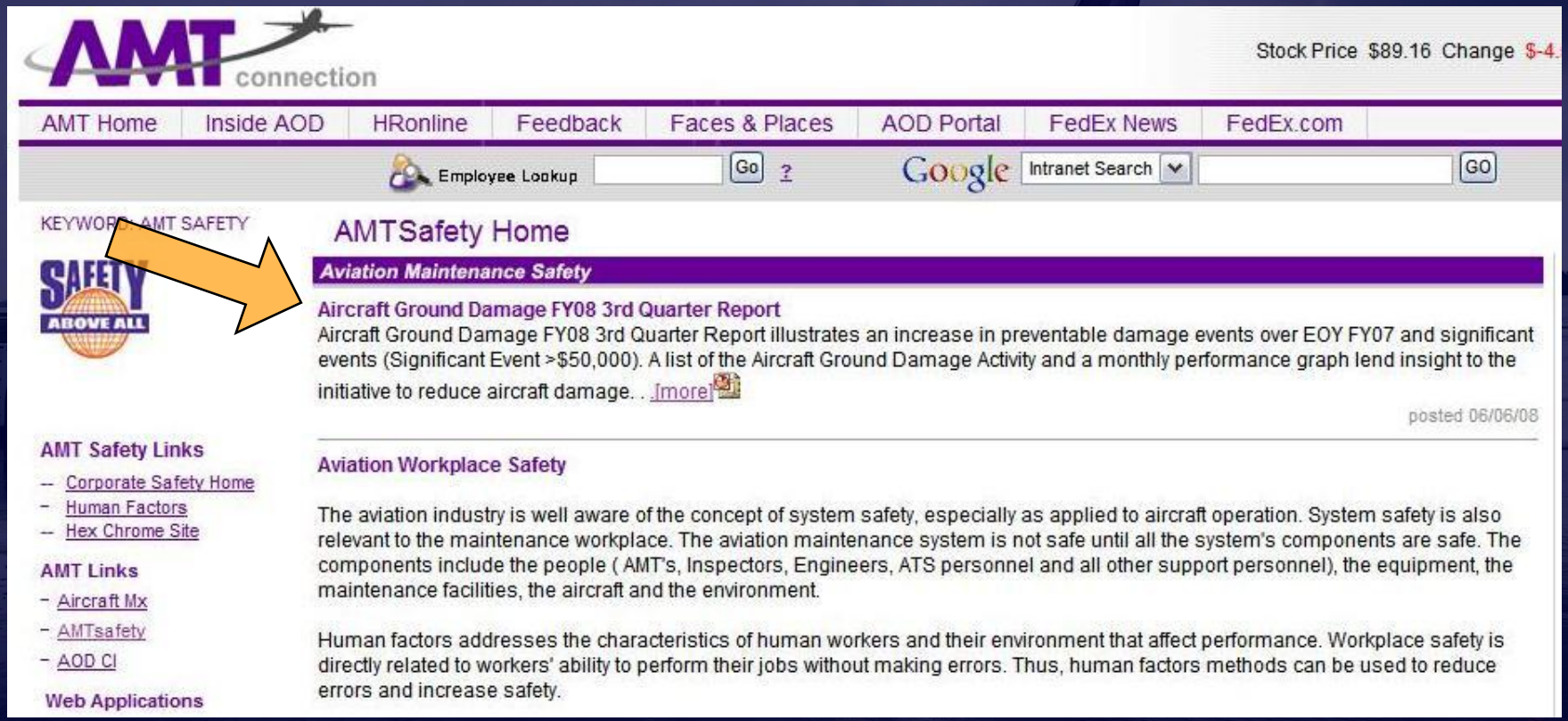
Chart 3 depicts the rate at which Rejected Takeoffs, Air Turnbacks (ATBs), and Declared Emergencies occur by fleet. These rates are adjusted for the number of departures by individual fleet. ►

Key to Bar Graphs

A300 A310 B727 DC10 MD10 MD11

Websites

- amt.aod.fedex.com



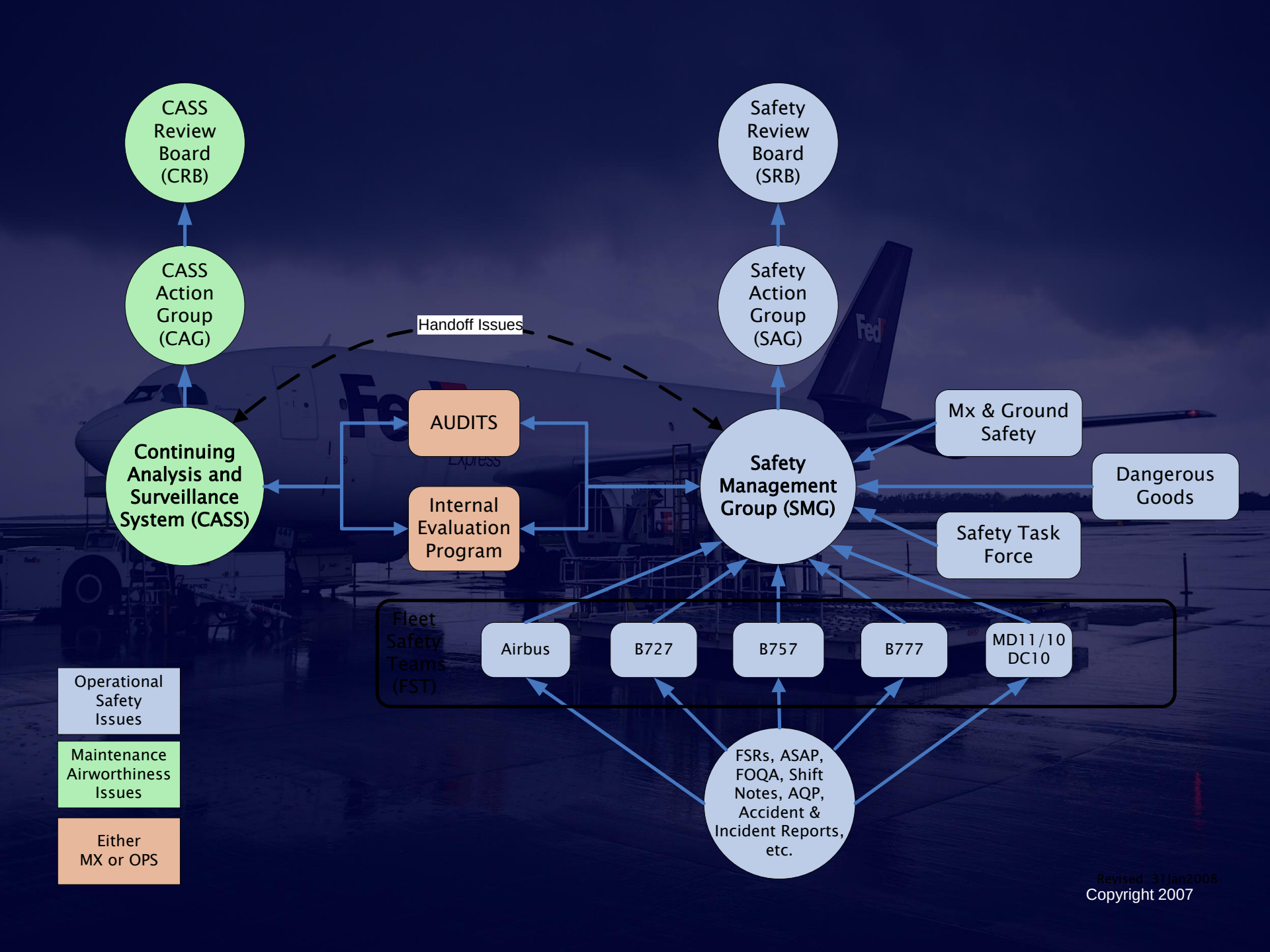
Aircraft Ground Damage
FY08 to FY07 Comparisons without Locks

ACTIVITY	1st QTR FY08	2nd QTR FY08	3rd QTR FY08	1st, 2nd & 3rd Qtr FY08	EOY FY07
Total Revenue Flights	57,277	55,862	57,290	170,429	229,851
Preventable Damage Events	133	191	230	554	410
Damage Rate/ 10000 Departures	23	34	40	33	18
Total Cost	$1,770,030	$2,101,723	$3,342,203	$7,213,956	$10,650,073
Total OOS Time	29 Days 11 hrs	28 Days 9 hrs	28 Days 18 hrs	86 Days 14 hrs	116 Days 18 hrs
Significant Events >$50,000.00	8	6	15	29	26
AOD Internal (# Events/ Cost)	7 / $255,111	11 / $168,469	15 / $487,068	33 / $910,648	50 / $5,545,643
Ramp Operations (# Events/ Cost)	52 / $705,965	71 / $636,592	97 / $1,135,832	220 / $2,478,389	232 / $1,717,628
Discovered (# Events/ Cost)	71 / $677,484	97 / $605,672	107 / $951,513	275 / $2,234,669	162 / $3,281,669
AOD External (# Events/ Cost)	3 / $131,470	15 / $690,990	19 / $767,790	37 / $1,590,250	12 / $105,108
Average Cost Per Event	$13,308	$11,004	$14,531	$13,022	$25,976

• Rate per 10,000 departures and GSE Training Strikes (2) for EOY FY07 were combined into Ramp Operations

Lessons Learned

- Current SMS model is built for a traditional air carrier
- Differently structured companies may find it difficult
- Manufacturers and others also have a different structure and management processes
- Interface relationships need to be addressed and lines of authority considered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